AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings of claims in the application:

LISTING OF CLAIMS

1. (Currently Amended) A method for annealing a lithium niobate ($LiNbO_3$) structure, the method comprising:

heating the lithium niobate structure in a sealed oxygen gas (O_2) atmosphere substantially lacking in H_2O, without introducing substantial quantities of undesirable free protons into the lithium niobate structure;

pressurizing the sealed oxygen gas atmosphere to exceed ambient atmospheric pressure;

maintaining temperature and pressure for an anneal period; and

cooling to room temperature.

2. (Previously Amended) The method of claim 1 wherein said heating comprises:

locating a lithium niobate powder proximate to the lithium niobate structure to retard outgassing of lithium oxide (Li_2O) from the lithium niobate structure.

3. (Previously Amended) The method of claim 2 wherein said heating further comprises:

separating the lithium niobate powder from the lithium niobate structure with an interface porous to lithium oxide gas outgassed from the lithium niobate powder and the interface substantially without porosity to the lithium niobate powder.

4. (Previously Amended) The method of claim 3 wherein the interface includes a porosity of approximately 20 microns.

5. (Original) The method of claim 1 wherein said pressurizing is within a pressure range of about 2 psi above ambient atmospheric pressure to about 25 psi above ambient atmospheric pressure.

6. (Previously Amended) The method of claim 1 wherein said heating is within a temperature range of about 150 degrees Celsius to about 900 degrees Celsius.

7. (Original) The method of claim 1 wherein said cooling occurs within a range of rates of about 0.5 degrees Celsius per minute to about 40 degrees Celsius per minute.

8. (Previously Amended) The method of claim 1 wherein said heating occurs at a rate within the range of about 0.5 degrees Celsius per minute to about 12.0 degrees per minute.

9. (Previously Amended) A method for annealing a lithium niobate ($LiNbO_3$) structure, the method comprising:

locating a lithium niobate powder in a space proximate to the lithium niobate structure to retard outgassing of lithium oxide (Li_2O) from the lithium niobate structure;

separating the space including the lithium niobate powder from the lithium niobate structure with an interface porous to lithium oxide gas outgassed from the lithium niobate powder, the interface being substantially without porosity to the lithium niobate powder;

heating the lithium niobate structure and the lithium niobate powder in a sealed oxygen gas (O_2) atmosphere;

pressurizing the sealed oxygen gas atmosphere to a pressure above ambient atmospheric pressure;

maintaining temperature and pressure for an anneal period; and

cooling to room temperature.

10. (Canceled)

11. (Previously Amended) The method of claim 9 wherein the interface includes a porosity of approximately 20 microns.

12. (Previously Amended) The method of claim 9 wherein the sealed oxygen gas atmosphere substantially lacks in H_2O.

13. (Original) The method of claim 9 wherein said cooling occurs within a range of rates of about 0.5 degrees Celsius per minute to about 40 degrees Celsius per minute.

14-18. (Canceled)

19. (Withdrawn) A lithium niobate ($LiNbO_3$) structure comprising an optically transparent portion, said optically transparent portion substantially void of free protons.

20. (Withdrawn) An optical modulator used in telecommunications systems comprising a lithium niobate ($LiNbO_3$) structure having an optically transparent portion, said optically transparent portion substantially void of free protons.

21. (Withdrawn) An optical waveguide used in telecommunications systems comprising a lithium niobate ($LiNbO_3$) structure having an optically transparent portion, said optically transparent portion substantially void of free protons.

22. (Currently Amended) A method for annealing a lithium tantalate ($LiTaO_3$) structure, the method comprising:

heating a lithium tantalate structure in a sealed oxygen gas (O_2) atmosphere substantially lacking in H_2O, without introducing substantial quantities of undesirable free protons into the lithium tantalate structure;

pressurizing the sealed oxygen gas atmosphere to exceed ambient atmospheric pressure;

maintaining temperature and pressure for an anneal period; and

cooling to room temperature.

23-25. (Canceled)

26. (Withdrawn) An electrode/insulation structure comprising:

a layer of silicon nitride; and

a gold electrode deposited directly thereon.

27. (Previously Amended) The method of claim 22 wherein said heating further comprises:

locating a lithium tantalate powder proximate to the lithium tantalate structure to retard outgassing of lithium oxide (Li_2O) from the lithium tantalate structure.

28. (Previously Amended) The method of claim 27 wherein said heating further comprises:

separating the lithium tantalate powder from the lithium tantalate structure with an interface porous to lithium oxide gas outgassed from the lithium tantalate powder and the interface substantially without porosity to the lithium tantalate powder.

29. (Previously Amended) The method of claim 28 wherein the interface includes a porosity of approximately 20 microns.

30. (Previously Amended) The method of claim 22 wherein said heating is within a temperature range of about 150 degrees Celsius to about 900 degrees Celsius.

31. (Original) The method of claim 22 wherein said cooling occurs within a range of rates of about 0.5 degrees Celsius per minute to about 40 degrees Celsius per minute.

32. (Original) The method of claim 22 wherein the pressurizing is within a pressure range of about 2 psi above ambient atmospheric pressure to about 25 psi above ambient atmospheric pressure.

33. (Original) The method of claim 22 wherein the heating occurs at a rate within the range of about 0.5 degrees Celsius per minute to about 12.0 degrees per minute.

34. (Previously Amended) The method of claim 22 wherein, wherein the lithium tantalate structure includes at least one of an optical modulator and an optical waveguide.

35. (Previously Amended) A method for annealing a lithium tantalate ($LiTaO_3$) structure, the method comprising:

locating a lithium tantalate powder in a space proximate to the lithium tantalate structure to retard outgassing of lithium oxide (Li_2O) from the lithium tantalate structure;

separating the space including the lithium tantalate powder from the lithium tantalate structure with an interface porous to lithium oxide gas outgassed from the lithium tantalate powder and the interface substantially without porosity to the lithium tantalate powder;

heating the lithium tantalate structure and the lithium tantalate powder in a sealed oxygen gas (O_2) atmosphere;

pressurizing the sealed oxygen gas atmosphere to a pressure above ambient atmospheric pressure;

maintaining temperature and pressure for an anneal period; and

cooling to room temperature.

36. (Canceled)

37. (Previously Amended) The method of claim 35 wherein the interface includes a porosity of approximately 20 microns.

38. (Previously Amended) The method of claim 35 wherein the sealed oxygen gas atmosphere substantially lacks in H_2O.

39. (Previously Amended) The method of claim 35 wherein said heating is within a temperature range of about 150 degrees Celsius to about 900 degrees Celsius.

40. (Original) The method of claim 35 wherein said heating occurs at a rate within the range of about 0.5 degrees Celsius per minute to about 12.0 degrees per minute.

41. (Original) The method of claim 35 wherein said pressurizing is within a pressure range of about 2 psi above ambient atmospheric pressure to about 25 psi above ambient atmospheric pressure.

42. (Original) The method of claim 35 wherein said cooling occurs within a range of rates of about 0.5 degrees Celsius per minute to about 40 degrees Celsius per minute.

43. (Previously Amended) The method of claim 35 wherein the lithium tantalate structure includes at least one of an optical modulator and an optical waveguide.

44. (Previously Amended) The method of claim 1 wherein the lithium niobate structure includes at least one of an optical modulator and an optical waveguide.

45. (Previously Amended) The method of claim 9 wherein said heating is within a temperature range of about 150 degrees Celsius to about 900 degrees Celsius.

46. (Original) The method of claim 9 wherein said heating occurs at a rate within the range of about 0.5 degrees Celsius per minute to about 12.0 degrees per minute.

47. (Original) The method of claim 9 wherein said pressurizing is within a pressure range of about 2 psi above ambient atmospheric pressure to about 25 psi above ambient atmospheric pressure.

48. (Previously Amended) The method of claim 9 wherein the lithium niobate structure includes at least one of an optical modulator and an optical waveguide.

49. (Original) The method of claim 6 wherein said heating is within a temperature range of about 150 degrees Celsius to about 600 degrees Celsius.

50. (Original) The method of claim 49 wherein said heating is within a temperature range of about 300 degrees Celsius to about 400 degrees Celsius.

51. (Original) The method of claim 30 wherein said heating is within a temperature range of about 150 degrees Celsius to about 600 degrees Celsius.

52. (Original) The method of claim 51 wherein said heating is within a temperature range of about 300 degrees Celsius to about 400 degrees Celsius.

53. (Original) The method of claim 39 wherein said heating is within a temperature range of about 150 degrees Celsius to about 600 degrees Celsius.

54. (Original) The method of claim 53 wherein said heating is within a temperature range of about 300 degrees Celsius to about 400 degrees Celsius.

55. (Original) The method of claim 45 wherein said heating is within a temperature range of about 150 degrees Celsius to about 600 degrees Celsius.

56. (Original) The method of claim 55 wherein said heating is within a temperature range of about 300 degrees Celsius to about 400 degrees Celsius.

57. (Currently Amended) A method for annealing a lithium niobate ($LiNbO_3$) structure, the method comprising:

heating the lithium niobate structure in a sealed oxygen gas (O_2) atmosphere substantially lacking in H_2O, without introducing substantial quantities of undesirable free protons into the lithium niobate structure, the lithium niobate structure being heated to within a temperature range from about 150 degrees Celsius and less than 400 degrees Celsius;

pressurizing the sealed oxygen gas atmosphere to exceed ambient atmospheric pressure;

maintaining temperature and pressure for an anneal period; and

cooling to room temperature.

58. (Canceled)

59. (Previously Amended) The method of claim 57 wherein said heating is within a temperature range from about 300 degrees Celsius and less than 400 degrees Celsius.

60. (Original) The method of claim 57 wherein said heating is performed at a temperature about 300 degrees Celsius.

61. (Currently Amended) A method for annealing a lithium tantalate ($LiTaO_3$) structure, the method comprising:

heating a lithium tantalate structure in a sealed oxygen gas (O_2) atmosphere substantially lacking in H_2O, without introducing substantial quantities of undesirable free protons into the lithium tantalate structure, the lithium tantalate structure being heated to a temperature range from about 150 degrees Celsius and less than 400 degrees Celsius;

pressurizing the sealed oxygen gas atmosphere to exceed ambient atmospheric pressure;

maintaining temperature and pressure for an anneal period; and

cooling to room temperature.

62. (Canceled)

63. (Previously Amended) The method of claim 61 wherein said heating is within a temperature range from about 300 degrees Celsius and less than 400 degrees Celsius.

64. (Original) The method of claim 61 wherein said heating is performed at a temperature about 300 degrees Celsius.

65. (Previously Presented) The method of claim 1 wherein the sealed oxygen gas atmosphere is a pure oxygen gas atmosphere.

66. (Previously Presented) The method of claim 9 wherein the sealed oxygen gas atmosphere is a pure oxygen gas atmosphere.

67. (Previously Presented) The method of claim 22 wherein the sealed oxygen gas atmosphere is a pure oxygen gas atmosphere.

68. (Previously Presented) The method of claim 35 wherein the sealed oxygen gas atmosphere is a pure oxygen gas atmosphere.

69. (Previously Presented) The method of claim 57 wherein the sealed oxygen gas atmosphere is a pure oxygen gas atmosphere.

70. (Previously Presented) The method of claim 61 wherein the sealed oxygen gas atmosphere is a pure oxygen gas atmosphere.